

California Environmental Protection Agency



Air Resources Board

EMISSION INVENTORY INFORMER

Fall 1998

ARB's Emission Inventory Web Page Changes

The layout of the entire ARB website has been standardized for easier access to information. Users should find the website to be more user-friendly.

From either the Emission Inventory Data or the AB 2588 web pages, one can get facility level toxic emission data. This report is generated from the ARB CEIDARS database.

The ARB Emission Inventory website can be found at www.arb.ca.gov/emisinv/eib.htm.

INSIDE

Ammonia Inventory Development
GIS Conference
1996 California Emission Inventory
SCOS97-NARSTO Aircraft Emissions
Emissions and Air Quality Almanac
Air Toxics Update
Speciation Profile Updates

The Emission Inventory Branch

On a beautiful summer day in Sacramento in which the temperature stayed under 100 degrees, Dale Shimp found some extra film in his camera so we took the following picture.



from left: Darryl Look, Krista Eley, Skip Campbell, Vivian Lerch, Janis Lackey, Carolyn Lozo, Hashim Navrozali, Vincent Agusiegbe, Anna Komorniczak, Ray Asregadoo, Vijay Bhargava, Rachel Kirlis, Beth Schwehr, Andy Alexis, Linda Murchison, Patrick Gaffney, Jon Taylor, Cheryl Taylor, Martin Johnson, Mena Shah, Richard Bode, Kirk Rosenkranz, Dennis Goodenow, Yosh Yajima, Fred Medina, Don Rake, Andy Delao, Miki Miyashiro, Chris Nguyen, Dale Shimp. Not pictured: Steve Francis.

Transportation Activity Section Returns to Emission Inventory Branch

The Office of Air Quality and Transportation Planning (OAQTP) which was part of the ARB's Executive Office was recently incorporated into the Technical Support Division. The resulting new division is now called the Planning and Technical Support Division. The OAQTP was made up of five sections. One of these sections, the Transportation Activity Section, has been added to the Emission Inventory Branch. The Transportation Activity Section, which is managed by Ed Yotter, examines motor vehicle activity and VMT estimates and works with local councils of government to resolve transportation modeling and planning issues related to air quality. Veteran EIB watchers will remember that this section had been part of the EIB until about six years ago. Looks like it's already time for a new group picture!

Ammonia Inventory Development Program

Staff of the ARB's Emission Inventory Branch is developing a county specific ammonia emission inventory for California. A first draft ammonia emissions inventory will be available early in the year 2000. This inventory will incorporate new research, activity data, and emission factors. After publication of a draft inventory, shortcomings will be identified and resolved through additional research and improvements. A final ammonia emission inventory, which is required for the PM_{2.5} SIPs, will be available in 2004.

Some of the specific ammonia sources to be estimated include livestock (beef, dairy, poultry, swine, etc.), fertilizer application, sewage treatment plants, biogenic emissions from soils, motor vehicle ammonia emissions, and industrial sources. Developing credible ammonia inventories will be difficult. For ammonia estimates there is a lack of accepted emission factor or activity data. Also, the emissions are affected by meteorology (temperature, humidity, winds), soil type, animal type, operational parameters, application methods, and other factors. Ammonia emissions can also vary substantially regionally and seasonally.

The ammonia emission inventory data will be used as inputs to air quality models to estimate PM_{2.5} formation as ammonia reacts with NO_x and SO_x in the atmosphere. Because of these modeling requirements, it is important to develop seasonally and spatially resolved ammonia emission estimates. The previous annual average, county-wide estimates used for other pollutants will not be adequate for ammonia in performing PM_{2.5} control strategy development for nonattainment areas.

For an overview of some of the issues regarding ammonia emission inventory development, a presentation given by ARB staff is available on ARB's web site at <http://www.arb.ca.gov/emisinv/invmeth.htm> under the PM_{2.5} and Ammonia Inventory heading. This presentation was given in Reno during July at a conference sponsored by WESTAR (Western States Air Resources Council) and U.S. EPA to discuss PM_{2.5} emission inventory development.

Contact: Patrick Gaffney
(916) 322-7303
e-mail: pgaffney@arb.ca.gov

GIS Conference

Emission Inventory Branch staff participated in the 1998 Environmental System Research Institute's (ESRI) Geographic Information System (GIS) Software User's Conference. Attended by 8,000 users of GIS, this conference provided an opportunity to display some of the technology being developed by ARB emission inventory staff. A map of San Joaquin Valley spatially- and temporally-resolved PM₁₀ emission estimates was created using soils and agricultural data layers. This map was displayed at a poster session and generated interest from many attendees due to the incorporation of multiple sources of geographic data to calculate spatially-resolved monthly estimates of air pollutant emissions.

ESRI staff presented numerous technical seminars on the implementation and future of desktop and Internet GIS software. Emission Inventory Branch staff hopes to use this software to create an easy-to-use query tool that could be used to generate dynamic emission maps based on user-supplied criteria via the Internet.

Contact: Skip Campbell
(916) 327-0301
e-mail: scampbel@arb.ca.gov

1996 California Emission Inventory

The emission inventory for 1996 is now available in a published report and on the Air Resources Board's internet web site. The emissions for criteria pollutants have been estimated for point sources, area sources, and mobile sources. The emission estimates are in tons per average day and are summarized by the regional areas of county, air basin, and statewide. For additional convenience, this report has been published on the web at www.arb.ca.gov/emisinv/emsmain/emsmain.htm.

A new feature for the standard reports that are generated from the Emission Inventory Data page is the ability to download the emission estimates to your own computer in a spreadsheet file format. For those users who have MS Excel on their computer, there is an option to download the file directly into an Excel spreadsheet.

Contact: Miki Miyashiro
(916) 327-0027
e-mail: vmiyashi@arb.ca.gov

Southern California Ozone Study (SCOS97-NARSTO) Zeroes in on Aircraft Emissions

The emissions from aircraft represent a not-well understood and potentially important portion of off-road mobile source emissions. The current aircraft emission inventory only estimates emissions up to 3500 feet and places those emissions at ground level for each airport. In order to better understand the effects of aircraft emissions on regional ozone formation, the Emission Inventory Working Group of the 1997 Southern California Ozone Study-North American Research Strategy for Tropospheric Ozone (SCOS97-NARSTO) is attempting to develop a more comprehensive and accurate way to account for aircraft emissions in Southern California. Understanding the contribution of aircraft emissions to Southern California's ozone problem is particularly important because the Southern California Association of Governments is forecasting a doubling of commercial aircraft activity by 2010.

Aircraft activity emits pollutants aloft into important ozone-forming air masses and at higher altitudes than other emission sources. To capture the impact of their emissions, the SCOS97-NARSTO study examined ozone formation from ground-level up to about 10,000 feet to provide information on air quality and meteorological conditions aloft. This was done using commercial aircraft activity data for the Southern California region. The commercial aircraft activity information is collected from the Federal Aviation Administration's Enhanced Traffic Management System by a private contractor (Dimensions Intl.), summarized, and then reported using a program called Flight Report. Flight Report tracks commercial aircraft takeoffs and landings as well as type of aircraft and the position of the aircraft as a function of time (latitude, longitude, elevation, time, ground speed, accelerations, and ascent/descent rate). The acquisition of aircraft operations data specific to aircraft and engine type will improve the ARB's ability to model aircraft emissions. These data will be used: 1) to determine emissions aloft, 2) as inputs to the photochemical models, and 3) to refine our understanding of the complex ozone processes (formation and transport) in Southern California.

Contact: Mena Shah
(916) 324-7165
e-mail: mshah@arb.ca.gov

Emissions and Air Quality Almanac

The ARB's Emission Inventory Systems and Air Quality Analysis Sections have completed their final review of "The 1999 California Almanac of Emissions and Air Quality." The Almanac includes both historical and current emission and air quality information related to ozone, PM₁₀, carbon monoxide, nitrogen dioxide, and

sulfur dioxide. The bulk of information in the almanac is presented at the statewide level and for the five major air basins: the South Coast, San Francisco Bay Area, San Joaquin Valley, San Diego, and Sacramento Valley Air Basins. In addition, summary data tables are included for all the counties and air basins in California. The document can be obtained by contacting us on the web at eibweb@arb.ca.gov or by telephone at (916) 322-6271.

Air Toxics Update

On October 22, 1998, the Air Resources Board approved the staff's proposed amendments to the Air Toxics "Hot Spots" Fee Regulation for fiscal year 1998-99. The only testimony given supported the staff recommendations. In addition, there were a number of recommendations, written and verbal, to the Board to seek alternative funding sources for the State portion of Program costs. The Board directed staff to organize a working group to develop statutory language that will change the Air Toxics "Hot Spots" Program's funding mechanism.

The Air Toxics Hot Spots Information and Assessment Act of 1987 requires the ARB to annually adopt a fee regulation. The Air Toxics "Hot Spots" Fee Regulation ensures that costs incurred to implement and administer the Air Toxics "Hot Spots" Program. These costs are recovered by assessing fees on facilities subject to the requirements of the Act. The fees assessed through this regulation are used to inventory air toxics emissions, prioritize facilities, prepare risk assessments, review risk assessments, notify the public of potential health risks from exposure to the emissions, and provide guidance to the facilities for reducing the risk from exposure to the emissions. The Fee Regulation specifically allocates the State's costs among the air districts. It also establishes facility fees for the six air districts that have requested the ARB to adopt their facility fee schedules.

For Fiscal Year 1998-99, the same method for distributing the State's cost among districts and for calculating fees as used in fiscal years 1996-97 and 1997-98 will be used. Facilities' fees for Fiscal Year 1998-99 are based on health risk assessment results or prioritization scores.

The amendments to the Fee Regulation adopted by the Board included: a) a reduction in the state costs to implement the Program for fiscal year 1998-99 to \$1.27 million; b) a freeze on the fee large facilities are assessed at the same levels as fiscal year 1997-98; c) an increase in the State fee assessed for industrywide facilities from \$25 to \$35; d) a revision to Appendix A of the Fee Regulation, and e) adoption of fee schedules for six districts.

This regulation impacts approximately 14,000 facilities, 2,000 less facilities than were affected by the previous fiscal year's Fee Regulation.

Contact: Kirk Rosenkranz
(916) 322-7673
e-mail: krosenkr@arb.ca.gov

Speciation Profile Updates

VOC SPECIATION PROFILES

On September 10, 1998, staff of the ARB's Control Strategy Modeling Section conducted a public workshop on proposed revisions to the ARB's organic gas speciation profiles for many categories of mobile source emissions. The proposed revisions affect the chemical species composition profiles used to estimate emissions for specific chemical species (e.g. benzene, ethylene, etc.). Speciation profiles are also used to estimate the reactive portion of total organic gas emissions (ROG) and specific reactivity. Revisions were proposed for:

- 1) All exhaust categories of pre-cleaner burning gasoline
- 2) All exhaust and evaporative categories of cleaner burning gasoline
- 3) Diesel exhaust
- 4) Jet engine exhaust

The incorporation of these revised profiles will help to better define the chemical composition of emissions from these sources, and should improve the reconciliation of the emission inventory with air quality data. The workshop was attended by people representing local air pollution control districts, environmental consultants, and business organizations.

The net effect of these changes is estimated to be a small (one to two percent) increase in the current statewide reactive organic gas (ROG) emission inventory. Some of the individual source categories may have somewhat more significant ROG increases (up to 15 percent). In addition, the ozone-forming potential, or specific reactivity, of several of the categories is estimated to increase by 10 to 70 percent compared to previous speciation profiles, primarily due to better characterization of fairly reactive constituents such as aldehydes.

Contact: Beth Schwehr
(916) 322-6002
e-mail: bschwehr@arb.ca.gov

PARTICULATE MATTER SIZE AND SPECIATION PROFILES

On August 14, 1998, staff of the Emission Inventory Branch conducted a public workshop on proposed revisions to the ARB's size fractions and chemical composition profiles for particulate matter used in the emission inventory. The workshop was attended by approximately 25 people representing local air pollution control districts, environmental consultants, and business organizations.

The proposed revisions affect the chemical species composition profiles and the particulate matter size fractions used to estimate PM₁₀ and PM_{2.5} emissions. Revisions were proposed for 24 PM emission categories which include landfill dust, construction dust, road dust, agricultural burning, and timber and brush burning. Most of the improvements have a relatively minor influence on overall PM emission estimates, producing changes of less than 5 percent. However, some profiles were significantly changed. Examples of significant changes include: 1) construction and landfill dust estimates, which will decrease by about 20 percent for PM₁₀ and by about 70 percent for PM_{2.5}; and 2) biomass burning estimates, which will increase by about 10 percent for both PM₁₀ and PM_{2.5}.

These revised profiles will help to better reconcile the emission inventory with air quality data. They will be incorporated into the ARB's emission estimates over the next few months.

Contact: Patrick Gaffney
(916) 322-7303
e-mail: pgaffney@arb.ca.gov

Articles from all issues of the *Emission Inventory Informer* can be found on the World Wide Web at <http://www.arb.ca.gov/emisinv/informer/inform.htm>

The Emission Inventory Informer is published by the Emission Inventory Branch, Technical Support Division, California Air Resources Board, with occasional contributions from other staff at the ARB. Inquiries should be addressed to:

Air Resources Board
Technical Support Division
P.O. Box 2815
Sacramento, CA 95812
Attention: Don Drake
(916) 322-7304
e-mail drake@arb.ca.gov; FAX (916) 323-1075

Let Us Know...

Please take a moment to complete the following survey and return it to the ARB. With your input, we can include the information that you need in future issues of the *Informer*.

Does the *Informer* provide you with information that you do NOT routinely receive through other sources (other newsletters, ARB letters, or personal contacts)?

yes_____ no _____

Comments?

What topics would you like to see in upcoming issues?

Optional: Name _____
Position _____
Company _____
Phone _____

Please help us keep our mail list current by informing us of any names that should be added or deleted.

Add _____ Delete _____

Name _____
Position _____
Company _____
Address _____

Phone _____

Please fold and mail, or FAX to (916) 323-1075, c/o Don Rake, or
e-mail: drake@arb.ca.gov

**Place
Stamp
Here**

**Air Resources Board
Technical Support Division
P. O. Box 2815
Sacramento, CA 95812**

Attention: Don Rake

Fold Here

Fold Here